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CASE REPORT

Lung cancer metastatic to the maxillary gingiva—a case report and literature review

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Summary Lung cancer metastatic to the gingiva is quite unusual. A total of 16 cases have been previously described in the English language medical literature. The case of a 49 year-old man with stage IV pulmonary adenocarcinoma is described in which two rapidly growing tumors with intermittent bleeding and tenderness were found over the maxillary gingiva during chemotherapy treatment. An excisional biopsy was performed and the presumptive diagnosis of metastatic adenocarcinoma was confirmed. Oral function, nutritional status, and quality of life improved after surgery.

Introduction

Lung cancer is the second most common cause of cancer death in Taiwan. The most common sites of lung cancer metastasis are regional lymph nodes, bone, lung, liver, and the brain. Metastasis to the oral cavity is unusual and gingival metastasis is extremely rare. Although gingival metastases are not life-threatening, it severely affects oral function and nutrition. Adequate local control improves nutritional status and quality of life. A case of pulmonary adenocarcinoma with gingival metastasis is reported.

Case report

A 49 year-old Taiwanese man was referred to the Chang Gung Memorial Hospital with a right lung mass on September 2, 2003. The patient underwent a

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transbronchial lung biopsy and a diagnosis of adenocarcinoma was made. The cancer staging was T4N2M1 with rib metastasis. He was initially commenced on weekly vinorelbine and monthly cisplatin chemotherapy. Because of disease progression, the regimen was changed to weekly gemcitabine, monthly cisplatin, and radiotherapy from November 26, 2003, onwards. Owing to poor tolerance of the side effects, his anticancer treatment was changed to oral gefitinib on March 3, 2004.

During the gefitinib treatment, two rapidly growing protruding masses were noted along his maxillary gingiva. Intermittent bleeding and tenderness were reported and impairing his oral function and appetite. An oral and maxillofacial surgeon was consulted and a $1.0 \times 1.0 \times 1.5$ cm, red pedunculated tumor was found over the right maxillary gingiva near the first molar (Fig. 1) and a $0.3 \times 0.3 \times 0.1$ cm tumor was found over the left anterior maxillary gingiva between the first and second incisors (Fig. 2). A complete excision was performed and no bony invasion was noted at surgery. The tumors were found to be metastatic adenocarcinoma and histopathologically identical to the lung cancer (Fig. 3). The patient's oral function and quality of life improved and his body weight improved. Two months later, the patient died from multiple distant lung cancer metastases.

Discussion

Metastatic lung cancer affecting the gingiva is extremely rare. A Medline search from 1964 onwards identified only 16 histologically confirmed cases in the English language literature from around the world.[1–12] The 16 patients and the currently presented patient were analyzed, and their demographic data are listed in Table 1. Even though lung cancer most frequently affects men, it is surprising that all of the 17 patients were male. This implies that gender may play a role in lung cancer metastasis to the gingiva. The median age was 58 years and ages ranged from 47 to 84 years. Gingival metastasis has been observed with all histological subtypes of lung cancer. It may be the initial finding or a late complication during treatment.

Figure 2 Periodontal tumor near the left anterior maxillary gingiva between the first and second incisor.

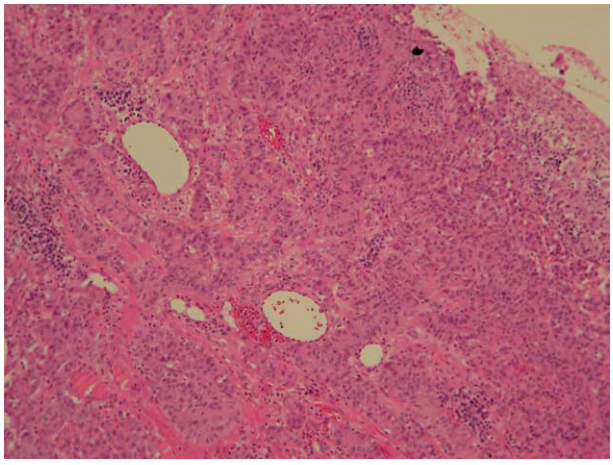

Figure 3 Extensive infiltration of nests and cords of tall columnar tumor cells with occasional luminal formation in the submucosal area of the gingival biopsy (H&E stain, original magnification ×100).

In patients with lung cancer, a rapidly growing gingival mass has many differential diagnoses, including odontogenic infection, cysts, pyogenic granuloma, benign tumors, and primary malignancy. In this patient, the left anterior gingival lesion was similar to periodontitis or a pyogenic granuloma. Antibiotic treatment can be tried initially but a biopsy is mandatory for definitive

Table 1 Lung cancer with gingival metastasis

Case	Authors	Sex	Age	Tumor type	Gingival location	Size (cm)	Year of study
1	O'Neil[1]	M	59	UDC	RL		1964
2	Adler et al.[2]	M	51	UDC	RU		1973
3	Donoff et al.[3]	M	70	SCC	RL		1976
4	Donoff et al.[3]	M	49	SC	RL		1976
5	Donoff et al.[3]	M	50	UDC	LL		1976
6	Ellis et al.[4]	M	58	AC	LU	1.5	1977
7	Sanner et al.[5]	M	57	UDC	LU	2.5×2.0	1979
8	Staalsen and Nielsen[6]	M	66	AC	RL	$2.5 \times 1.5 \times 2$	1992
9	Alandez et al.[7]	M	47	SC	LU	3×2	1995
10	Kadokura et al.[8]	M	54	AC	RL		1999
11	Vieira et al.[9]	M	57	UDC	RU, LU	2.0×3.5	2001
12	Tanaka et al.[10]	M	64	LCC	RU		2002
13	Tanaka et al.[10]	M	68	LCC	RL, LL		2002
14	Tanaka et al.[10]	M	64	LCC	LU		2002
15	Yoshii et al.[11]	M	61	LCC	RL	1×1.3	2002
16	Aoe et al.[12]	M	84	SCC	LL	3	2003
17	This study	M	49	AC	RU,LU	$1 \times 1 \times 1.5$ $0.3 \times 0.3 \times 0.1$	2005

AC, adenocarcinoma; SC, squamous cell carcinoma; SCC, small cell carcinoma; LCC, large cell carcinoma; UDC, undifferentiated carcinoma; RU, right upper; RL, right lower; LU, left upper; LL, left lower.

diagnosis. Metastatic cancer is the least likely cause and the incidence is around 1%.[6] The most likely metastatic route is hematogenous spread.[3]

The treatment of choice for gingival metastasis remains controversial. In the past, systemic chemotherapy or radiotherapy was recommended to be the most effective treatment.[6,10] As this case demonstrates, if the gingival metastasis is a late complication during lung cancer treatment, it has not responded to chemotherapy. Radiotherapy is also unsuitable for multiple lesions. Surgical excision under local anesthesia provides rapid relief of symptoms and improves dental function, especially in those without bony involvement. Nutritional status significantly affects quality of life in patients with terminal lung cancer.

In conclusion, gingival metastasis is a very rare complication of lung cancer. Excisional biopsy is necessary for diagnosis and has the potential to simultaneously restore oral function and improve nutritional status.

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